

**Progress in Laser Based Carbon Nanotube Production and in-situ Diagnostics
at NASA/JSC**

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Abstract

This paper focuses on the improvement of carbon nanotube production with the upgraded laser system operating at 60 Hz. The yield has increased by about five times with the new system, while the quality of the single wall nanotube (SWNT) is unchanged. Recent diagnostic data of spatial and temporal evolution of C_2 in the laser ablation plume are obtained by imaging the plume area on a gated charge coupled device. A three-laser setup is used to monitor nickel atoms in different parts of the plume by laser induced fluorescence (LIF). Measurements are made at different times after the ablating lasers. These results, along with the previous measurements of emission and LIF of C_2 will be discussed. Our ultimate goal is to use these measurements to model the nanotube growth mechanism.